IT Real-Time training that work for your career.

PROVIDED TRAINING FOR THOUSANDS OF STUDENTS.

SUBJECT, MATERIAL & VIDEOS

VIDEOS PROVIDED

POWER BI

a)Power BI End-End steps
b)Working with Flat file and excel files
c) Working with Databases [Using Query, View, and Procs]
d)Working on Import and Direct Query Modes
e)Working with Analysis Services Cubes [Tabular]
f) Working with JSON
g)Working with Lists (Blank Query) and Mashup
h)Working with Azure SQL Database [Cloud]
i)Dynamically creating table

Note:
This document is for queries creation from possible feeds

MSBI
IS, AS, RS & MDS

POWER BI
SERVER, DESKTOP & DAX

Trainings:
CLASS ROOM
ONLINE

FAST TRACK
ONE ON ONE
PROJECT TRAINING

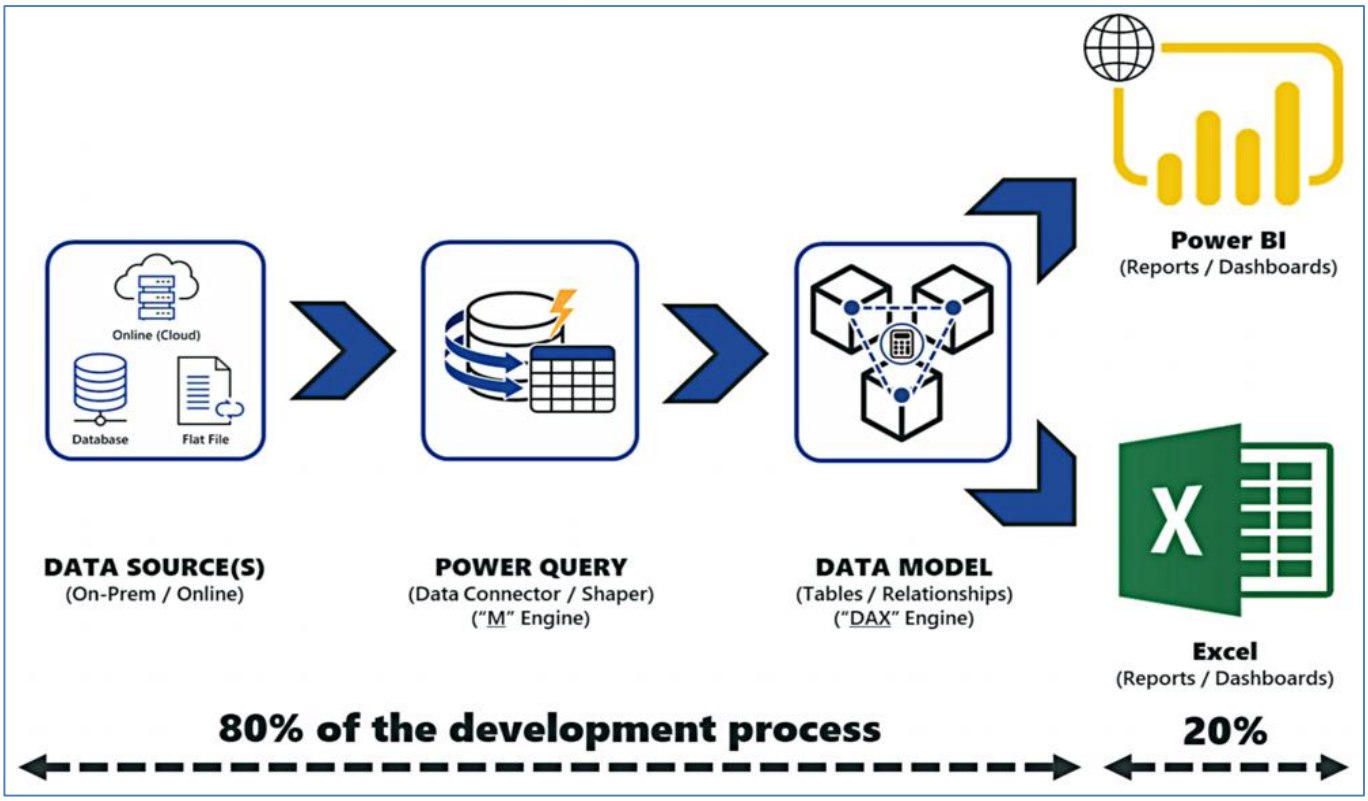
Address:
Flat No: 506/B
Nilgiri Block
Aditya Enclave
Mytrivanam Area
Hyderabad.

Website & Blog
www.vinaytechhouse.com
www.msbivinay.blogspot.in

Contact Information
+91 9573168449
040 66638869

Sri VINAY TechHouse

POWER BI BASIC REPORTS PRACTICE [END-END] WITH MOST OF THE DATA



POWER BI END – END PROCESS

a) **RETRIEVE DATA [structured, semi structured, and unstructured]**
b) **Shape Data [Shaping]**
c) **Model Data [Modelling]**
d) **Report Data [Reporting]**
e) **Publish Report [Publishing]**
f) **Create Dashboard and mobile reports**
g) **Share or subscribe reports and dashboards**
h) **Access the reports and dashboard for customer decision making, analysis, analytics and insights.**
i) **Customer Reviews to the designers and other colleagues**

Scenario: Retrieving data report from Web Site/ Blog URL

a) Identify the URL and Tables

b) Get Data-->Web--> http://www.vinaytechhouse.com/register-today.html

c) Choose Tables [Document ignore]

d) Load [this will take structure and data]

Scenario: Getting data from Flat file, Generate Report, and publish it.

Open Desktop

Get Data--> Text/ Csv--> Browse to file [**Party_Src.csv**]

File Origin: Country and Code page [Language charset]

Delimiter: Separator in the file data [comma, space, tab space, pipe etc...]

Data type Detection: First 200 rows [Default option]

System identifies the data type based on first 200 rows of the column values.

Ex:

Assume you have 1000 records, first 200 are textual data next 200 are dates and the other are numeric.

It will take Textual data because of first 200 columns

Real-time usage: If we detect properly, you can apply calculations easily [Normal and DAX].

Click Load [this will take structure and data]

Go to Data view and see the accuracy of data, if it not good then go for Edit Queries to move into Power Query Area [ETL Area where it load and operates in in memory using Vertipaq engine]

Queries--> Rc--> Remove Top Rows (2) -->Step1 added in the right hand side

Rc--> Use First Row as Headers → Step2 added in the right hand side

Close and Apply

Goto Report view, take table and drag and drop fields [PARTYID, PARTYNAME, PARTYLOC and PARTYINCOME] from field's pane into Values section.

Ensure aggregation unchecked (Sum or Avg or Count etc...) for PARTYID, PARTYNAME, PARTYLOC AND PARTYINCOME.

PARTYID, PARTYNAME and PartlyLoc --.Don't summarize

Partyincome--Sum

Format Options [As you wish]

Home menu--> Publish

Go to Power BI cloud [app.powerbi.com], connect, My Workspace, Reports→See the report

What are the objects have Focus Mode?

Only Visual and Book mark

Scenario: Getting data from Excel and Generate Report.

[Vinaytech_Business_Details_Dataset.xls]

Get Data--> Excel-->Browse to the file--> Tick mark the below dimension and fact tables

DimDate,DimCourse, DimCourseModelD, DimLocation, DimStudent and FactPayments

Scenario: Getting data from Excel and Generate Report. [Budget.xls]

Open the sheet and observe.

Always dataset require columns and values [No aggregate information or any], please apply transformations to make that data as proper columnar data.

Observations:

We never maintain row level aggregate data, so remove those Sub values.

We never maintain date values column wise, so transpose / convert columns to rows [Unpivot]

Get data--> Excel--> Browse to Excel file (Budget.xls)--> Choose the Sheet--> Edit -->

Implement the below

1) Row Transformations

a) Remove top 2 rows

b) Use first row as headers

c) Go to First Column [Ex: category] -->Rc-->Filter-->Uncheck the SubTotalCategory, SubTotalBikes, SubTotalCloths and GrandTotal boxes

2) Column Transformations

Highlight first four columns --> right click--> Unpivot other columns, so that Month column values converted into Row Values.

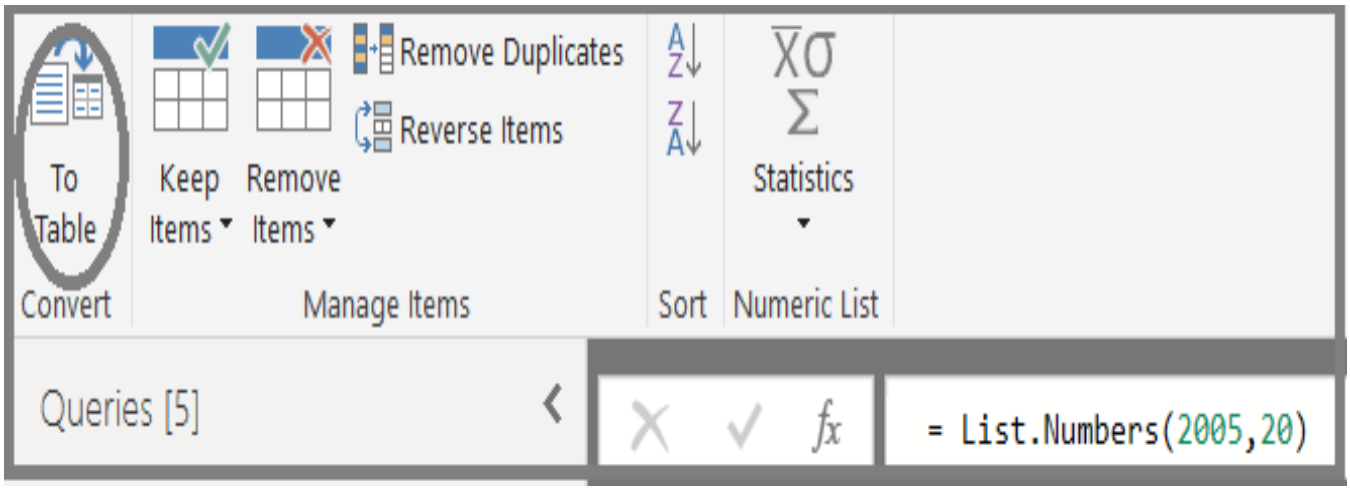
Scenario: Create a list and convert to table using Blank Query

Get data--> **Blank Query**--> Expression bar **=List.Numbers(2005,20)**

Now it will generate a list with the values between 2005 and 2025.

To convert to table, home ribbon →click TO Table icon and press ok.

Note: Add columns and write expressions to get desired result



Scenario: Create a table by writing M (Mashup) steps at Blank Query

Get Data--> Blank Query--> Advanced Editor→ place like below

GetParty = Csv.Document (File. Contents ("C:\DATA\PARTY_SRC.csv"),[Delimiter=",", Columns=5, Encoding=1252, QuoteStyle=QuoteStyle.None])

Scenario: Create a query by retrieving from JSON file [Semi structured]

JSON: Java Structured Object Notation

1.Semi Structured file

2.Contains Attributes and Properties

3.System reads in a different way, so we need to handle based on the situation.

1) Get Data→ specify other options→JSON→ Choose products.json file

2) Click on List, s that it will show you records in a column

3) Click to table on top

4) Go to the expand symbol→click→choose columns [all or required], now the table is expanded.

Scenario: Get data through Python Script

Refer to Python script and visual topic in this material

Scenario: Get data from Azure SQL Database [cloud]

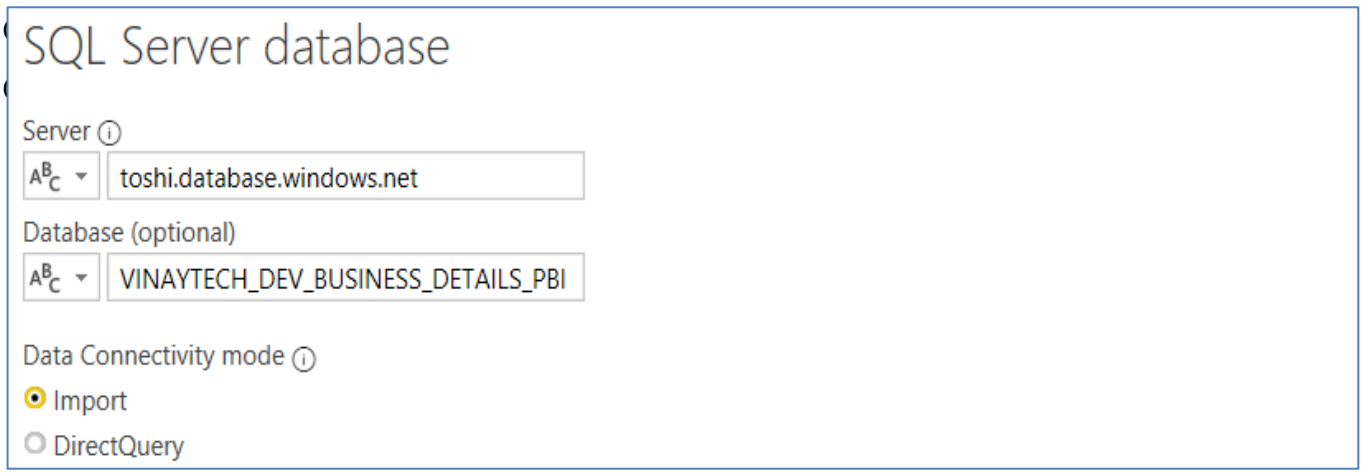
To work with Azure [SQL Database / SQL Warehouse / Analysis Services], know the below entries.

a) Azure servername where it installed

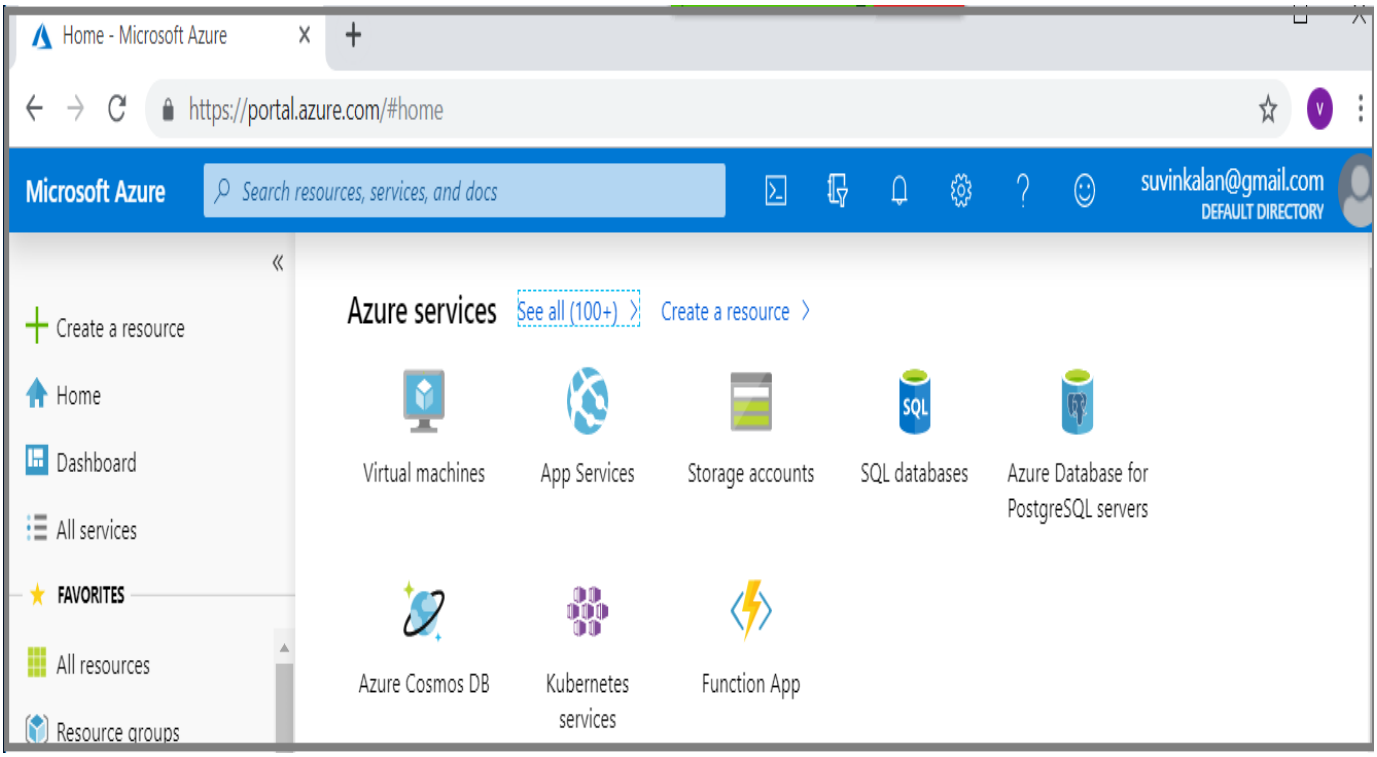
b) Databasename

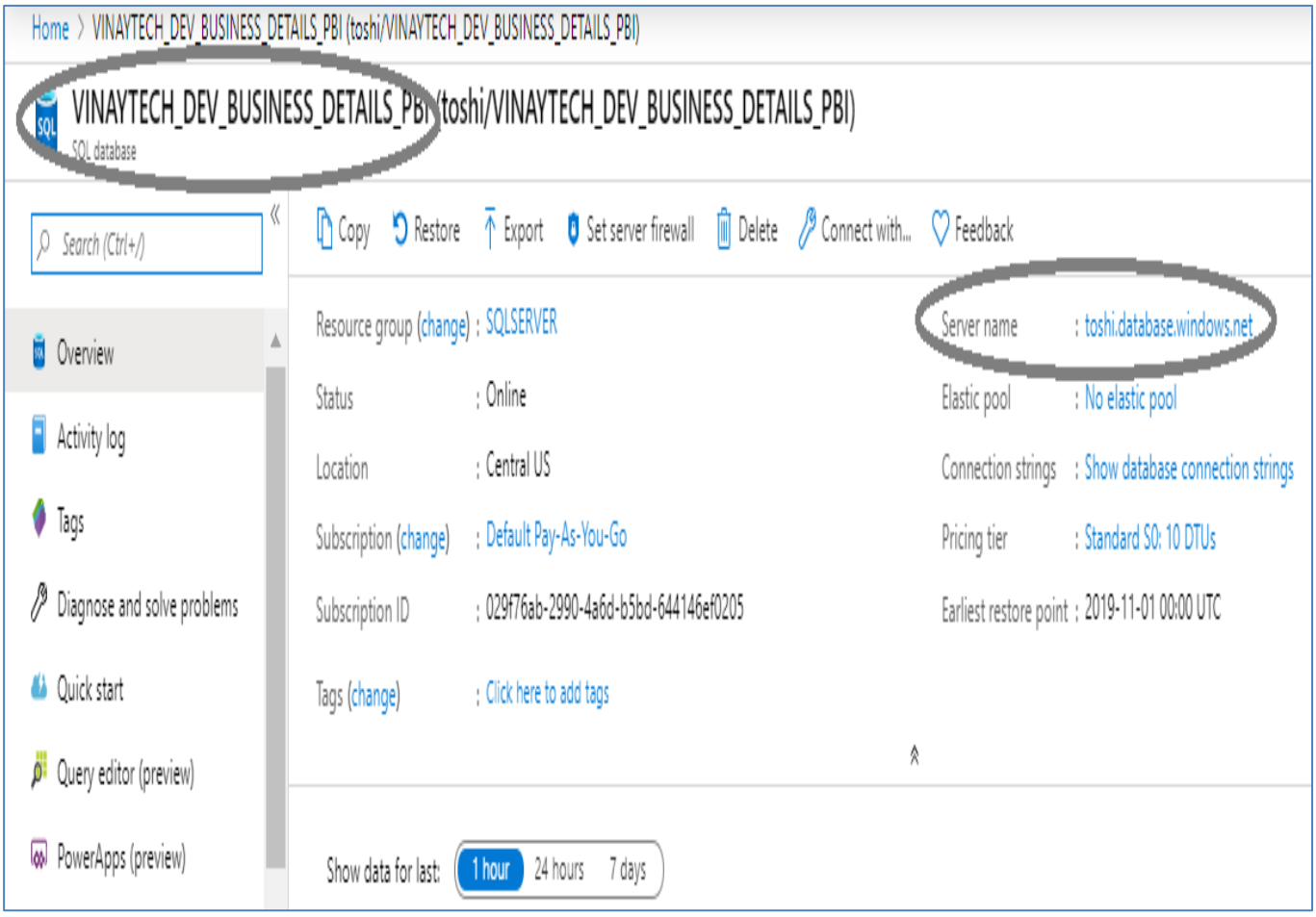
c) Credentials [Azure active directory credentials or SQL Credentials]

In Power BI DESKTOP



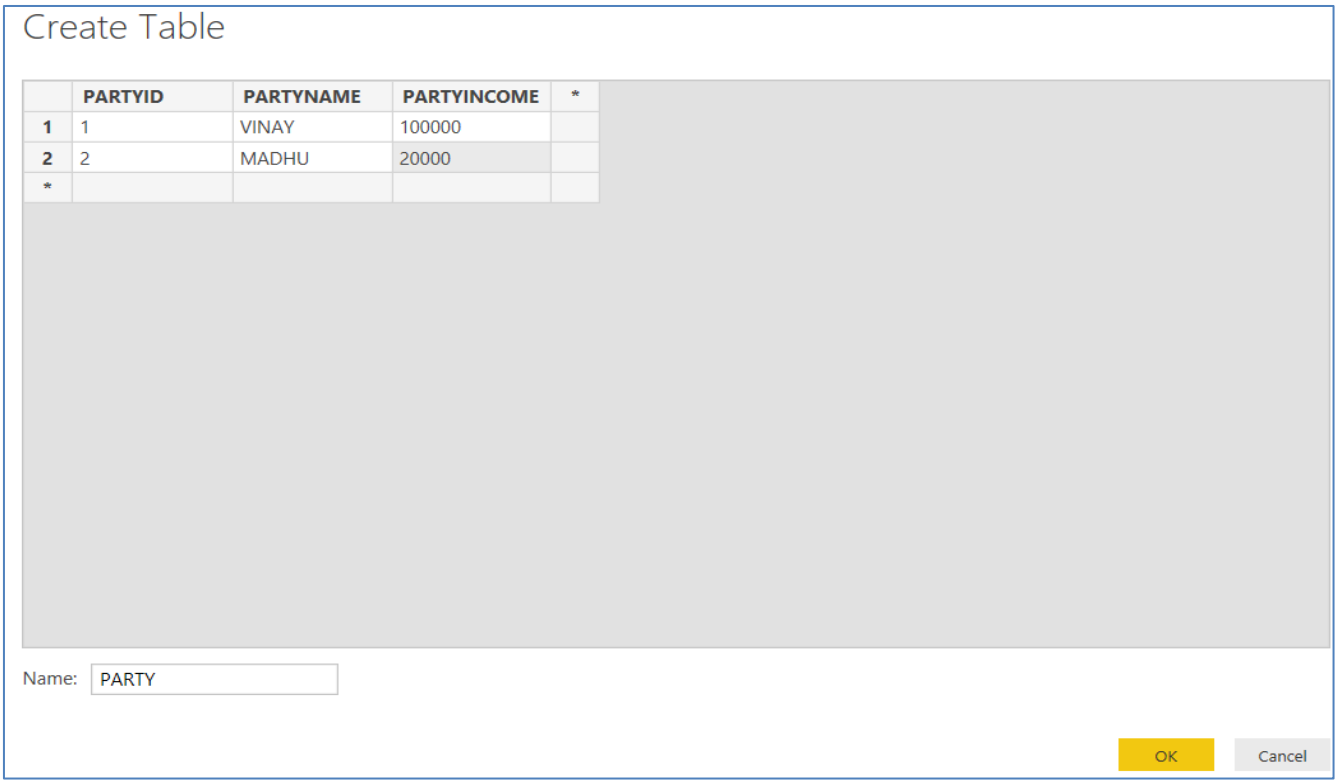
Note: See the below to recognize the Azure Server and Database name.





Scenario: Create a table Dynamically at Desktop / Query

Click Table icon in the home menu at Power BI Desktop, enter the below rows, provide table name and click Ok



WORKING ON DATABASES

Database: A storage area where data stored in the form of tables.

There are three types of databases

a) Relational Database
b) Multidimensional Database
c) No SQL Databases

Relational Databases:

Oracle, SQL Server, Teradata etc.

Cube Databases:

MSBI-SSAS [Multidimensional & Tabular], SAP Netviewer, SAP HANA, Hyperion Cubes etc.

NO SQL Database:

Dynamo DB, Mongo DB etc.

Working on SQL Server Database [Simple Practice]

It requires

a) SQL Server Database Engine Installation

b) SQL Server Management Studio [SSMS]

This studio is suitable to work with multiple databases [Normal, Cube, DQ, MDS etc.]

Note: Install the above by following the video and Installation Documents.

Important points to remember:

a) To work with Relational databases, we need SQL [Structured Query Language]

b) To work with Multidimensional databases, we need MDX [Multidimensional Expression Language]

c) To work with Tabular databases, we need DAX [Data Analysis Expression]

Working on SQL Server Database [Simple Practice]

Open SQL Server Management Studio→ Server Type: Database Engine→Connect,

Click on New Query and execute each statement by pressing F5 or clicking execute icon.

```
--Create database [storage creation inside instance/server]
Create database db_dec_7pm;

--Using the above created database
use db_dec_7pm;

--Create schema [logical object inside database to create groups for the
objects]

create schema sc;

--Create a table
create table sc.emp(eid integer,enm varchar(20),did integer,jdate date)

--Insert single record into the table
Insert into sc.emp values(1,'xyz',10,'2020-12-03')

--Insert multiple records into the table
Insert into sc.emp values(2,'mno',20,'2020-12-05'),
(5,'mno',30,'2020-12-06'),(4,'mno',20,'2020-12-05')

--Retrieving data from table

Select * from sc.emp

/*
Views

a) View is a logical object to get required data from
    single or multiple tables
b) Some people call it as Window to a table / Virtual object /
   No storage object
c) View contains single select statement

*/

Syn:

Create view <viewname> as
(
Single SELECT statement
)

Ex:
--Create view which shows dept 10 data
```

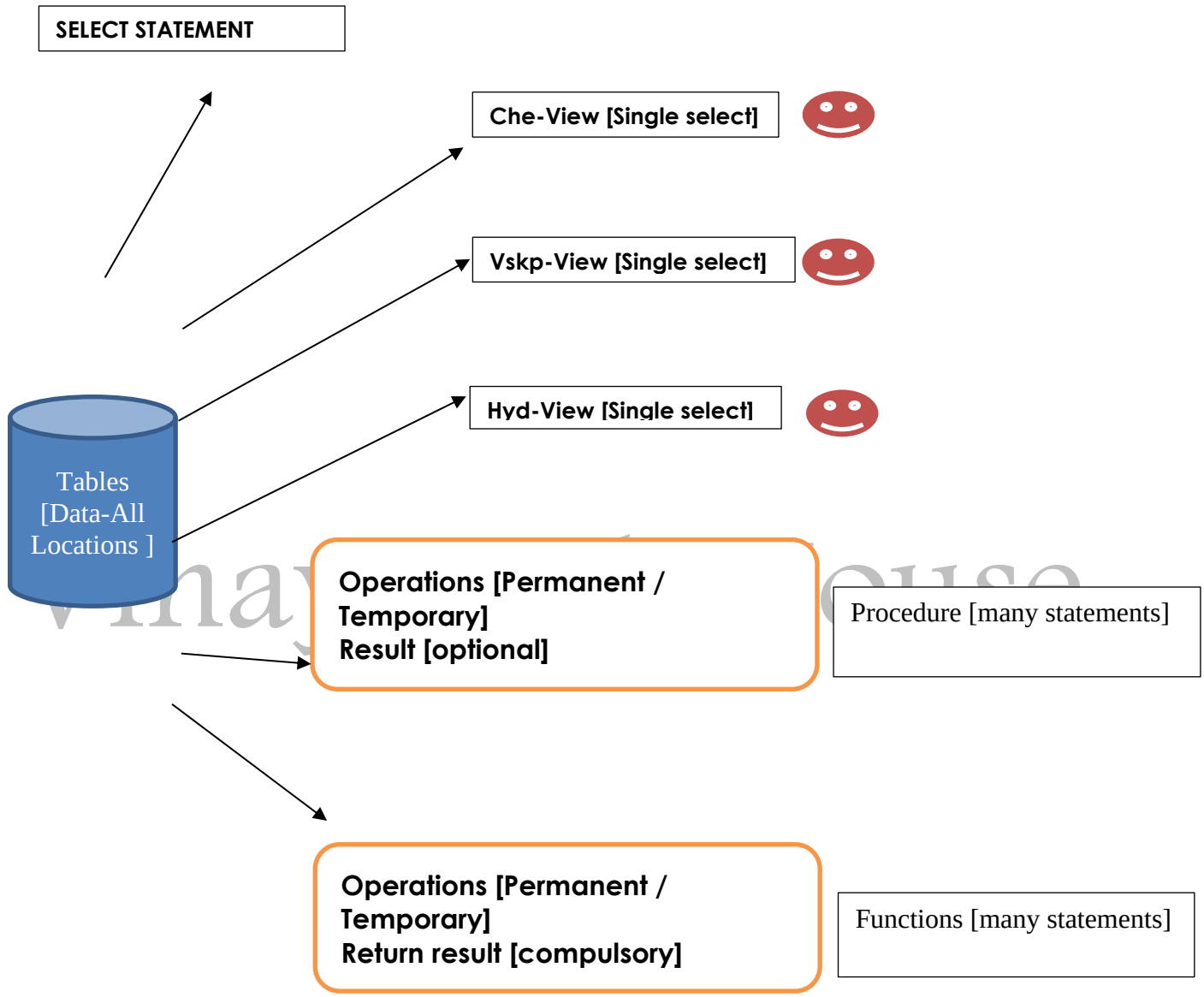
```
Create view vw_10 as
(
select * from sc.emp where did=10
)
--Calling view
select * from vw_10

--Create view which shows dept 20 data
Create view vw_20 as
(
select * from sc.emp where did=20
)
--Calling view
select * from vw_20

--Create view which shows dept 30 data
Create view vw_30 as
(
select * from sc.emp where did=30
)
--Calling view
select * from vw_30

/*

Procedure

a) The complex object inside database is procedure
b) It takes multiple statements and also support programming concepts
c) It uses Input, Output parameters and also return values using
   Return keyword
d) It is called / referenced using seperate protocol
    Exec / Execute command
e) To implement set of operations and to return result, this is
   helpful

*/
Syn:
Create procedure <procedurename> (args IN/ Out)
as
Begin

Set of statements

End;

Ex: --Create procedure without parameters
Create procedure pr
as
begin

select * from sc.emp;
```

```
end;

--Calling procedure
Exec pr

Ex: --Create procedure with input parameters
create or alter procedure pr1(@id integer)
as
begin

select * from sc.emp where did=@id;
end;

--Calling procedure
Exec pr1 10

Ex: --Create procedure with input and output parameters
create or alter procedure pr2(@id integer,@nm varchar(30) out)
as
begin

select @nm=enm from sc.emp where eid=@id;
end;

--Calling procedure
Declare @name varchar(30)
Exec pr2 1, @name out
print @name

/*

Functions

1. Perform set of operations and return result [mandatory]

2.It is less complexity object than procedure

3. We can call inside select statement

*/
Syn:
Create function <fname>
return <returntype)
(
return ...
)

Ex: --Creating function which will take value and return result

Create function fn_dept(@id integer)
returns table
```

```
return (select * from sc.emp where did=@id)

--Calling the function to show dept 10 value

select * from fn_dept(10)

--Calling the function to show dept 20 value

select * from fn_dept(20)
```

Q: How many ways we get data from a database?

SQL CONSTRUCTS [a) SELECT b)VIEWS c)PROCEDURES d)FUNCTIONS]



DIRECT SELECT	VIEW	PROCEDURE	FUNCTION
Hits database tables and get data	Logical object Which calls underlying select and hit tables	Multiple operations performing and returning result	Multiple operations {few operations}
Return result	**Return result**	**Result is optional**	**Result compulsory**
One statement	**One statement (select)**	**Multiple statements**	**Multiple statements**

How many ways we get data In Power BI?

a)Import mode (choose tables or views / write query / call procedure)

b)Direct Query (choose tables or views / write query / call procedure)

Get the SQL Server Details:

Instance Name, Database name, Object Name / View / Procedure

Get Data--> SQL Server-->

Instance Name: DESKTOP-RN4SMHT\VINAYTECH_2017

Database Name: VINAYTECH_DEV_Business_Details

Import

Choose the tables to Load / Edit

Database Views:

a) Logical object / window to tables / virtual object

b) No data inside view, it has just one Select Statement Structure

c) When we call view (using simple select), it hits the database and execute the select statement inside body and retrieves data.

Create like below in SSMS--> Vinaytech_Business_Details database

```
CREATE VIEW VW_Business_Details AS
(
SELECT DC.*, DM.*, F.Actual_fee, F.Discount_Fee
FROM FactPayments F
INNER JOIN DimCourse DC ON DC.CourseID=F.CourseID
INNER JOIN DimCourseMode DM ON DM.ModeID=F.ModeID
)
```

Calling:

```
SELECT * FROM VW_Business_Details
```

Scenario: Getting data from SQL Server Database and Generate Report from Views.

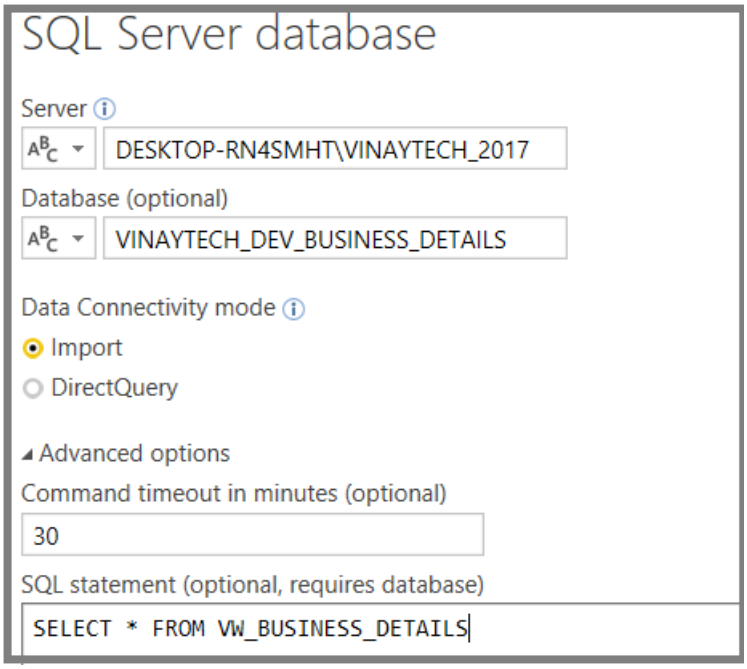
There are two ways

a) Import / direct query, choose view from the list
b) Import / Direct query, write a select statement to get data

b) Second way:

Get the SQL Server Details:
Instance Name, Database name, Object Name / View / Procedure
Get Data--> SQL Server-->
Instance Name:DESKTOP-RN4SMHT\VINAYTECH_2017
Database Name: VINAYTECH_Business_Details
Direct Query
Advanced tab
Command timeout in minutes: 30 (After 30 minutes query execution aborted)
SQLStatement:

Select * from VW_BUSINESS_DETAILS



Database Procedures

a) Precompiled object with collection of statements, so at run time it will not compile and directly participate in execution.

b) Procedures can implement multiple statements and perform an operation.

c) Procedures are recommended to make database changes isolated (independent) to the Power Bi Report.

Ex: One table structure changed, if we use procedure in Power BI we need not get those changes. Procedure will take care of it.

Differences between view, procedure and function?

Create a procedure like below in SSMS

```
CREATE PROCEDURE PR_BUSINESS_DETAILS(@ Year as integer)
AS
BEGIN
SELECT
DC.COURSENAME, DC.DURATION,
DM.DESCRIPTION,
DI.INSTITUTENAME,
DL.LOCATIONNAME,
DS.STUDENTID, DS.FST_NAME, DS.CITY, DS.STATE_NAME, DS.COUNTRY_REGION,
DT.DATE, DT.YEAR, DT.QUARTER, DT.MONTH, DT.MONTHNAME, DT.DAY,
F.ACTUAL_FEE,F.DISCOUNT_FEE,F.[Tax amount]
FROM FactPayments F
INNER JOIN DimInstitute AS DI
        ON F.INSTITUTEID=DI.INSTITUTEID
INNER JOIN DIMCOURSE AS DC
        ON F.CourseID=DC.CourseID
INNER JOIN DimCourseMode AS DM
        ON F.ModeID=DM.ModeID
INNER JOIN DimLocation AS DL
        ON F.LocationID=DL.LocID
INNER JOIN  DimStudent AS DS
```

```
        ON F.StudentID=DS.StudentID
INNER JOIN DimDate AS DT
        ON F.Date=DT.Date
Where DT.Year=@Year
END;
```

Scenario: Getting data from SQL Server Database and Generate Report from Procedure.

Get the SQL Server Details:

Instance Name, Database name, Object Name / View / Procedure

Get Data--> SQL Server-->

Instance Name: DESKTOP-RN4SMHT\VINAYTECH_2017

Database Name: VINAYTECH_Business_Details

Import

Advanced tab

Command timeout in minutes: 30 (After 30 minutes query execution aborted)

SQLStatement: `PR_BUSINESS_DETAILS  2019`

Note: While we are using Import Mode, You can't take sources of other modes [Connect Live and Direct Query]

But you can add as many as possible and from heterogeneous applications to import mode Dataset.

SCENARIO: Practice Modes [Import, Direct Query and Connect Live]

a) Import: [Two ways]

Get data->SQL Server-> Import-> choose tables-> Load

1st Way:

Get data->SQL Server-> Import-> choose tables-> Load

2nd Way:

Get data->SQL Server->Import -> go to advanced specify timeout and write query-> Load

b) Direct Query: [Two ways]

1st Way:

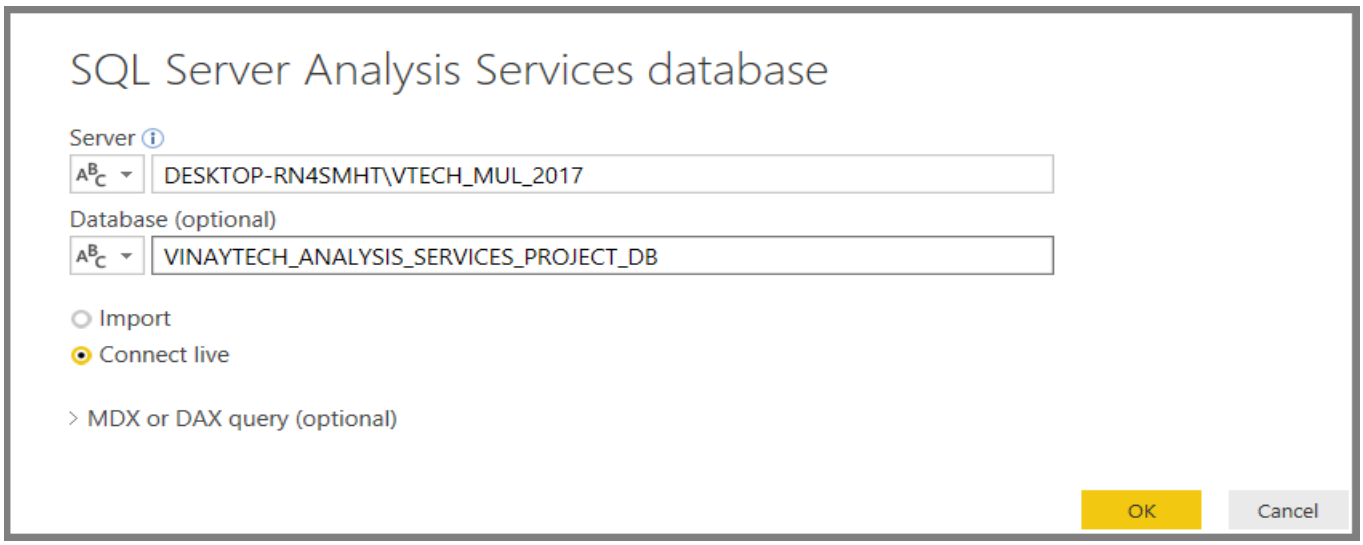
Get data->SQL Server-> Direct Query-> choose tables-> Load

2nd Way:

Get data->SQL Server-> Direct Query-> go to advanced specify timeout and write query-> Load

c) Connect Live: [Two ways] For Analysis Services Only

1st Way: Get data->SQL Server Analysis Services-> Connect Live-> choose tables-> Load



2nd Way:

Get data->SQL Server Analysis Services-> Connect Live-> Go to advanced specify MDX query for Multidimensional model/ DAX for Tabular model> Load

What are the things we need to collect when we work with cubes?

Identify Multidimensional or Tabular cube

a) **Multidimensional cube**

1) Server name 2) Cube database name 3) Tables or MDX query

MDX—Multidimensional Expressions

b) **Tabular cube**

1) Server name 2) Cube database name 3) Tables or DAX query

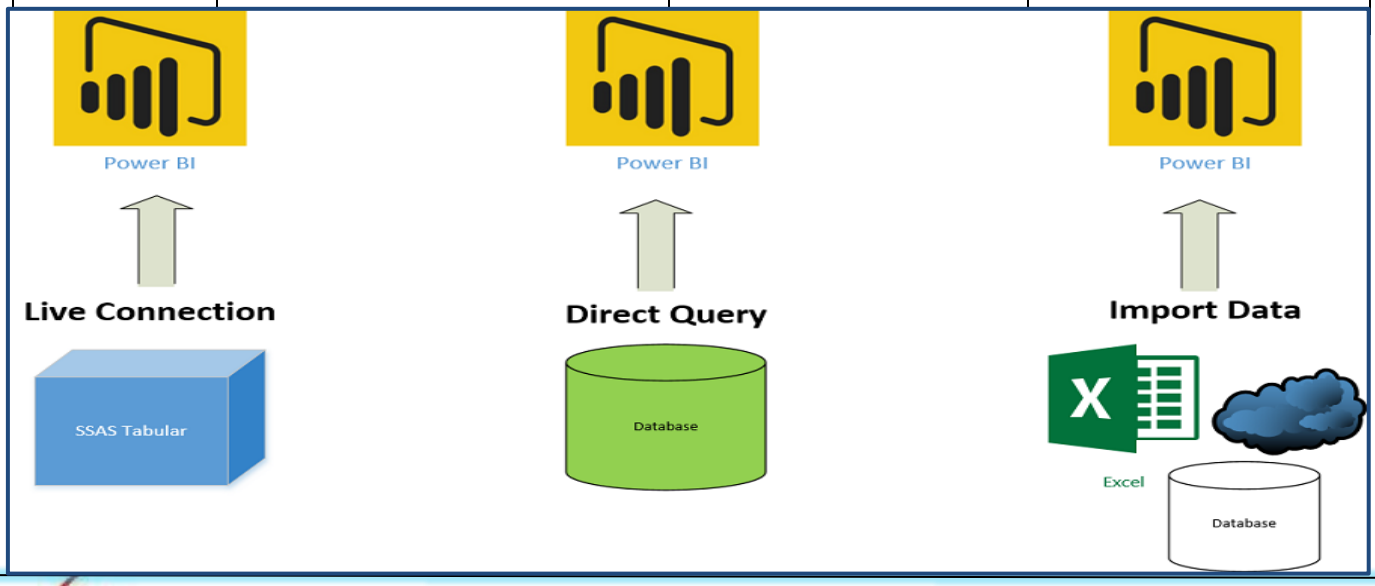
DAX—Data Analysis Expressions

Why Tabular Model and Power BI combination is good?

Tabular Model	Power BI
Supports modeling	When you use in Power BI, no need to model
Supports Calculations, measures creation using DAX	You can use those directly instead of creating here
Uses in memory process (vertipaq)	Uses in memory process (vertipaq)

Q: What are the options not visible when we work with Direct Query and Connect Live?

Load	Import	Direct Query	Connect Live
Structure and Data	Data and structure comes to Power BI Desktop (in-memory)	Structure comes from databases	Structure comes from Analysis Services
	Data limitation [1GB]	NA	NA
	Data refresh required [manual or scheduled [either 8 / 48]	Not required [always hit]	Not required [always hit]
Files	More sources [excel, file etc…]	Databases	Analysis Services databases
Report view, Data view, Model view available	Report View, Data View, and Model View available	Report View and Model View [No Data view]	Mostly Report View [As SSAS has in built model]
Refresh required	Report queries your Power BI dataset	Report Queries your actual data source	Report queries your actual data source
	Import for SSAS tabular model possible	Direct query for SSAS tabular not possible	Connective live possible
	Over medium sized datasets with pre-aggregations	Over large datasets to show current data	
	Single and both directions possible	Mostly the relationship is single direction [both direction has limitation]	
	Full support to Time Intelligence capabilities. It treats date table columns as date columns	Time intelligence capabilities not available. It will treat date table columns as normal.	
Full	Full modeling and transformations	Limited modeling and transformations	
1 GB data	1GB data limit applied	Number of rows it can return is 1 million [it can work with more than 1 million for aggregates]	



[Basic Practical Document with multiple Data Feeds]	
End to End report process in Power BI	Get Data, Transform Data, Model Data, Report Data, Publish, Dashboard Create, Alerts to Dashboard, Subscription and Sharing to Reports and Dashboards, Working on Customer Reviews.
Flat file load practice	Get Data--> Files-->Text / .csv file
Use Sample.xlsx to generate report	Get Data--> Files--> Excel
Use Budget.xlsx to generate report	Get Data--> Files--> Excel
Working with SQL Server	Get Data--> SQL Server Database
SQL Server Import Mode	Get Data--> SQL Server Database, choose Import Mode
SQL Server Database Direct Query Mode	Get Data--> SQL Server Database, choose Direct Query Mode
SQL Server Database Customized query retrieval	
SQL Server Database View Data	
SQL Server Database Procedure Data	
SQL Server Database View Data	
Working with SQL Server Analysis Services	
Analysis Services Connect Live	Get Data--> SQL Server Analysis Services, choose mode Connect Live
Getting data from Web	Get Data--> Files--> Web-->URL
Getting Data from JSON File	Get Data--> Files-->JSON a) Read like List b) Convert to table c) Expand columns to show like table
Import Theme	View Menu--> Browse theme--> Specify JSON file [Vinaytech_Business_Details.JSON]
Getting Data From Blank Query	Get Data--> Blank Query--> Expression Bar [=List.Numbers(2000,25)]
Getting Data Through Mashup Process	Get Data--> Blank Query--> Go to Advanced Editor and write the mash up statements [from material copy and paste] Refer to Power Query Material PDF-5
Getting Data Through Python Script	Get Data--> Python Script
Getting Data from Azure SQL Database / Data warehouse	Know the SQL Server name(vinaytech.database.windows.net), Database Name, Credentials to connect to that, and Firewall Settings.

FREQUENTLY ASKED QUESTIONS IN THIS TOPIC	
How to change from Direct Query to Import Mode?	Simply go to Power BI Dataset status bar and click **Switch mode.**
How to change from Import Mode to Direct Query?	Lot of process involved to do this. [Refer to the document given]
Difference between Query and List?	Query contain multiple columns, whereas List contain single column.
What is Mixed Mode?	Having Import and Direct Query in a storage mode level is called Mixed Mode.
How do we identity which mode you are in?	Go to Desktop→ Report View→ Status bar [right corner]
Which mode we can covert from Mixed Mode?	Import Mode

Which mode is recommended in Real-time?

For less volumes of data, Import / Load mode is required

For more volumes of data, Direct Query / Connect Live is recommended.

What happens in case of Import Mode?

a)Data comes from sources to Power BI Desktop

b) This Desktop occupies memory, so we call this as "in-memory"

c) Power BI uses a Powerful Engine called "Vertipaq" which is used to process the data in the memory.